

July 2001

# Cote d'Ivoire

*Natural gas reserves and excess electricity generating capacity could lead to Cote d'Ivoire becoming a significant regional energy supplier. Recent offshore discoveries in the Gulf of Guinea, including gas finds in its territorial waters, make Cote d'Ivoire a leading area for hydrocarbon exploration in sub-Saharan Africa.*

Note: Information contained in this report is the best available as of July 2001 and can change.



## GENERAL BACKGROUND

Laurent Gbagbo was declared president following a recount of the October 2000 election results. Gbagbo defeated General Robert Guei in a controversial election that saw candidates from Cote d'Ivoire's two main parties -- Cote d'Ivoire Democratic Party (PDCI) and Rally of the Republicans (RDR) -- excluded from the race. Guei had assumed the presidency following the Christmas Eve 1999 coup that toppled President Henri Konan Bedie. Although Gbagbo's victory restored civilian rule to Cote d'Ivoire, the country's political structure remains fragile.

Cote d'Ivoire's economy is heavily reliant on agriculture (primarily cocoa, coffee and timber). Agriculture accounts for nearly a third of Cote d'Ivoire's gross domestic product (GDP) and approximately 70% of the country's export earnings. The Ivorian economy experienced steady growth, with real GDP growth averaging 7.0% annually from 1995-1998. Depressed prices for Cote d'Ivoire's main commodities, coupled with the country's political crisis, led to a meager 1.5% increase in real GDP in 1999, and a 2.4% decline in 2000. Inflation, which had fallen from 14.1% in 1995 to 0.8% in 1999, crept up to 2.5% in

2000. Since 1990, the government of Cote d'Ivoire (GOC) has privatized 44 of the 61 entities it had scheduled for privatization. In 1990 the GOC privatized the management of the [Compagnie Electricite Ivoirienne \(CIE\)](#), the state electric utility, and other enterprises scheduled for privatization include the state's portion of the [Societe Ivoirienne Raffinage \(SIR\)](#) oil refinery, and segments of Petrolieries de la Cote d'Ivoire (Petroci), the national oil firm.

In March 1998, Cote d'Ivoire and the [International Monetary Fund \(IMF\)](#) signed a three-year, \$384 million [enhanced structural adjustment facility \(ESAF\)](#). Under terms of the ESAF, Cote d'Ivoire is to reduce its budget deficit, liberalize more sectors of its economy, and allocate more resources to health and education. Completion of the ESAF agreement led to a rescheduling of Cote d'Ivoire's commercial bank debt, bilateral debt and the country's inclusion in the IMF/[World Bank](#) debt forgiveness program for [highly indebted poor countries \(HIPC\)](#). The IMF and the World Bank suspended aid in the fourth quarter of 1998 following an evaluation of the ESAF. Payment arrears also led to the suspension of the aid package Cote d'Ivoire was receiving from the [African Development Bank \(AfDB\)](#). Cote d'Ivoire's political turmoil also has led to the suspension of bilateral aid from several sources.

Cote d'Ivoire plays a significant role in West Africa. It is the leading member (accounting for 41% of the group's combined GDP) of the [West African Economic and Monetary Union \(UEMOA\)](#). UEMOA is composed of eight West African states (Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo) that share the same currency (the CFA franc). Cote d'Ivoire is also a member of the 16-nation [Economic Community of West African States \(ECOWAS\)](#). In September 1998, the Abidjan Stock Exchange was replaced by the [Bourse Regionale des Valeurs Mobilières \(BRVM\)](#), a regional stock exchange. The BRVM serves as the regional exchange for the member nations of the UEMOA.

## **OIL**

Cote d'Ivoire contains an estimated 100 million barrels of recoverable oil reserves, with offshore reserves first discovered in the 1970's. During the twenty-year period from 1970 to 1990, over 100 wells were drilled offshore Cote d'Ivoire, and several commercial oil and gas fields were discovered. Two fields, Espoir and Belier, began production in the late 1970's. Espoir, which was operated by [Phillips Petroleum](#), was in production until 1988, when it was shut in due to high operating costs. Production from Espoir averaged 10,000 barrels per day (bbl/d). Production from the Belier field peaked at nearly 20,000 bbl/d in the mid 1980's.

The national oil company, Petroci, was established in 1975. In 1996, the GOC announced plans to restructure Petroci into a group of companies consisting of a holding company and several subsidiaries. The restructuring of Petroci was completed in 1998 and the new entities created were: Petroci Holding, a fully state- owned company that is responsible for the state's portfolio management in the oil sector and the three subsidiaries; Petroci Exploration-Production, responsible for upstream hydrocarbon activities; Petroci-Gaz, responsible for development of the gas sector; and Petroci Industries-Services, responsible for all other related services. Up to 49% interest in the three subsidiaries will be available to the private sector.

U.S.-based [Ocean Energy \(Ocean\)](#) discovered the Lion and Panthere fields on Block CI-11 in 1994. Production from Lion (oil) and Panthere (gas and condensates) began in mid-1995. Current production from Block CI-11 is 20,000 bbl/d of oil and nearly 70 million cubic feet per day (mmcf/d) of natural gas. Ocean's (operator) partners on Block CI-11 are Petroci and Pluspetrol of Argentina. Ocean has continued development work on Block CI-11. In February 2000, Ocean drilled the Lion A5 deep-sea oil well on the block. The well was considered a success and was completed as a producer. Recoverable reserves on Block CI-11 are estimated to be 210 million barrels of oil and 495 billion cubic feet (bcf) of natural gas.

Ocean holds interests (ranging from 35%-80%) in several other blocks in Cote d'Ivoire. Development on offshore block CI-01, where several small fields have been discovered, is continuing. Although primarily gas discoveries, the Gazelle field has recoverable oil reserves estimated at 8 million barrels. Ocean is the majority holder on Blocks CI-02, CI-12 and CI-104. Ocean holds a 35% interest and is the operator on Cote d'Ivoire's first deep-water offshore block, CI-105. Ocean's partners are [Shell](#) (55%) and Petroci (10%). Ocean began exploration drilling on CI-105 in the first quarter of 1999. The Grand Lahou well was drilled, but was plugged after it was deemed to not be commercially viable. Shell will assume the role of operator if Block CI-105 comes into development.

Calgary-based [Canadian Natural Resources](#) (CNR), through its wholly-owned subsidiary Ranger Oil Cote d'Ivoire, holds interests in several offshore blocks. CNR assumed a 24% interest and the role of operator in the production-sharing contract (PSC) for Block CI-26 in November 1997. The block contains the abandoned Espoir field, which CNR plans to re-develop. CNR later increased its interest in Block CI-26 to 36.33%. CNR's partners on CI-26 are: Addax Petroleum (22.34%) of the Netherlands, Ireland's [Tullow Oil](#) (21.33%) and Petroci (20%). It was announced in May 2001, that CNR had acquired Addax's equity interests in Block CI-26, increasing its stake to 58.67%.

Espoir field development, estimated to cost \$265 million, will include two unmanned wellhead platforms with hydrocarbon processing on a Floating, Production, Storage and Offloading (FPSO) vessel. The FPSO will have crude oil production capacity of 40,000 bbl/d and water injection capacity of 60,000 bbl/d. Espoir's oil production will be exported by shuttle tanker, while the gas will be piped to shore where it will be used to generate electricity. The field has a life expectancy of 20-25 years and first production is currently scheduled for January of 2002. Initial production is expected to be around 13,000 bbl/d of oil and 34 mmcf/d of natural gas. Production is expected to peak at 28,000 bbl/d of oil and 35 mmcf/d of natural gas. Espoir's recoverable reserves are estimated at 93 million barrels of oil and 180 billion cubic feet (bcf) of gas. The [West African Development Bank](#) has approved a \$9.35 million loan to Petroci for the hydrocarbon development and production project on CI-26.

CNR is also operator, with a 24% interest, on the PSC for offshore Block CI-102. CNR's partners on the block, which is situated between the Espoir and Belier fields are [Gulf Canada](#) (24%), [Energy Africa \(Engen\)](#) of South Africa (24%), Canada's [Gentry Resources](#) (11%), T.C. Petroleum (5%) and Petroci (12%). CNR was awarded the PSC's for Block CI-101 and Block CI-103 in January 1998. CNR was designated operator on both blocks and its partners are the same as on Block CI-102, excluding Engen.

The blocks are located south and southeast of Block CI-102. Gentry Resources (Gentry) sold the majority of its interests in blocks CI-101 and CI-103 to [PanCanadian Petroleum](#). The transaction, in which Gentry sold its 15% stake in both blocks, became effective in May 1999. Gentry will retain a 2% share in the blocks. Gentry also sold its 11% interest in CI-102 to Canada's Stratic Energy in exchange for nearly 3.5 million shares of Stratic stock.

Block CI-40 was awarded under a PSC by the GOC in April 1998. CNR (61% interest) was named operator, and is joined by Svenska Petroleum (29%) and Petroci (10%). In March 2001, CNR announced a discovery on Block CI-40, Cote d'Ivoire's first deepwater oil find. The Baobab discovery had a flow rate of 6,700 bbl/d of 22°-23° API oil. The Baobab well will be suspended for possible future use and further appraisal wells are under consideration. Block CI-40 lies 5 miles (8 kilometers) south of the CNR-operated Espoir field.

Several other independent oil firms from North America and Europe are involved in Cote d'Ivoire's upstream sector. [Devon Energy](#) (formerly Santa Fe Snyder) of the U.S. was awarded a PSC for Block CI-24 in 1996, and subsequently received the PSC for an additional block, CI-202, in 1997. Devon announced, in February 2001, that it would probably seek to divest its interests in Cote d'Ivoire. This announcement follows the unsuccessful results of wells drilled on CI-202. Block CI-24 contains the shut-in Belier field.

Houston independent Vanco Energy (Vanco) signed PSCs for Blocks CI-109 and CI-112 in May 1999. Vanco (90% interest and operator) and Petroci (10%) are the PSC partners on Block CI-109. Vanco (76.5% and operator), Xpronet (13.5%) and Petroci (10%) are the partners on Block CI-112. In May 2001, Vanco acquired Xpronet's 13.5% interest in Block CI-112. The transaction increases the interest of Vanco to 90%, with a 10% interest retained by Petroci. In February 2001, Petroci approved Vanco's request to relinquish Block CI-109, Vanco's other license offshore Cote d'Ivoire.

The U.K.-based [Dana Petroleum](#) has signed an exploration agreement with Cote d'Ivoire for Block CI-100, which is directly west of acreage held by Dana in [Ghana](#). Dana made an oil discovery on the Ghanaian block in March 2000, and hopes that the oil-bearing structures continue into Ivorian waters. CI-100 is also adjacent to CI-01 where hydrocarbon discoveries were also made.

Zetah Oil Co., a multinational oil company based in Cote d'Ivoire and majority-owned by Petroci, signed a contract worth \$44.5 million with the government of Benin to resume oil production in Benin's Seme region. This region reportedly holds about 22 million barrels of oil, but due to lack of profitability, it ceased operations in 1998. Zetah projects that production will be between 2,500-5,000 bbl/d.

### **Refining and Downstream Oil Activities**

Cote d'Ivoire's refining facilities are composed of the 65,200-bbl/d SIR refinery and an adjacent 10,000-bbl/d asphalt plant ([Societe Multinationale des Bitumes-SMB](#)) in Abidjan. An oil pipeline connects the SIR refinery to the Lion and Panthere fields. The refinery also receives crude from [Nigeria](#) for refining. Expansion of the SIR refinery is being considered. An \$84 million expansion, which would increase



refining capacity to 88,000 bbl/d, was announced in 1998, and the GOC was looking for a "strategic partner" willing to invest in the expansion. The 2-year expansion program would also increase the plants hydrocracking capacity to over 17,000 bbl/d. The [U.S. Agency for International Development](#) provided a \$3 million grant to fund a feasibility study on the expansion of the refinery. The sale of 37% of the government's share in SIR was suspended in December 1999 following the coup. A new tender for the privatization of SIR was launched in September 2000. SIR is currently owned by Petroci (45.7%), [TotalFinaElf](#) (25.3%), [Shell](#) (10.3%), [ExxonMobil](#) (8.1%), the [government of Burkina Faso](#) (5.4%), [Texaco](#) (3.7%) and the GOC (1.5%). The GOC's interest in SMB also has been scheduled for privatization. SMB's industry partners are SIR (53%), Petroci (20%) and Shell (6%). An additional 21% is held privately (SMB stock is traded on the BRVM).

A petroleum products depot, adjacent to SIR, stores petroleum products for domestic use as well as products destined for other countries in the West African region. The depot, owned by the Societe de Gestion des Stocks Petroliers de Cote d'Ivoire (Gestoci) supplies products to Mali, Burkina Faso, Niger and [Chad](#). Nigeria also has received shipments of refined products from Cote d'Ivoire to help ease fuel shortages created by problems with its refineries. Gestoci also operates fuel depots in Bouake and Yamoussoukro. Gestoci, currently joint-owned by the GOC and the petroleum marketers, is set to be restructured. The plan calls for the GOC to have its stake in Gestoci reduced to 34%. The GOC anticipates that refinery expansion coupled with upgrades to Gestoci's Abidjan storage facilities will transform the country into the "Rotterdam of Africa", and make Cote d'Ivoire the main supplier of refined products on Africa's Atlantic seaboard. A products pipeline from Abidjan to Bouake is being considered. Currently products are shipped by rail and truck to the Bouake depot. The line, if constructed, may also be extended to Burkina Faso, Guinea and Mali. Several foreign oil companies (and one local firm, PetroIvoire) are involved in the distribution and marketing of refined products in Cote d'Ivoire. ENI-Agip, ExxonMobil, Texaco, TotalFinaElf and Shell control over 90% of the downstream retail sector.

## **NATURAL GAS & LPG**

Natural gas reserves in Cote d'Ivoire, first discovered in the 1980's, have begun to be developed and utilized. Current estimates of Cote d'Ivoire's recoverable natural gas reserves stand at 1.1 trillion cubic feet. Over the next four years, the GOC estimates that natural gas consumption will grow by 50%. In 1999, CNR signed a contract to supply gas from the Espoir field located on Block CI-26. Natural gas production from Espoir is expected to average 35 mmcf/d over 20 years.

Ocean and its partners are currently producing gas from the Panthere field on Block CI-11. The gas is transported to a site near Abidjan via pipeline. Currently the gas is used primarily to generate electricity, but future industrial uses are planned. Ocean announced in April 1997 that it had signed a ten-year take-or-pay agreement to supply 170 bcf of gas for electricity generation. Under a take-or-pay agreement the buyer agrees to pay a certain price for a specified amount of gas, whether they actually use (take) the gas or not. The gas would be supplied from fields operated by Ocean located offshore eastern Cote d'Ivoire in Block CI-01 (Kudu, Eland and Ibex fields) and Block CI-02 (Gazelle field). The contract calls for initial deliveries, to begin in early 1999, of 30 mmcf/d for the first two years increasing to 50 mmcf/d for the remainder of the contract.

U.S.-based [Apache](#) was granted a ten-year take-or-pay contract for Block CI-27 in April 1997. Apache's partners on the field are [Electricite de France \(EDF\)](#), Petroci and [Saur - Bouygues \(SAUR\)](#). The offshore block, which contains the Phillips-discovered Foxtrot natural gas field, is primarily seen as having the greatest potential as a gas producer. The original estimate of recoverable reserves on Block CI-27 included over six million barrels of condensate. Foxtrot is now the country's largest natural gas deposit, with an estimated 650 bcf of recoverable gas. The partners initiated production in June 1999. In September 1999, Apache reduced and restructured its holdings on Block CI-27 by selling its stake in Foxtrot field to Mondoil. Mondoil and SAUR assumed joint management of the operation. Apache continues to provide technical services to the project, and it retains an interest through its participation in Mondoil (Apache is a shareholder in Mondoil).

Cote d'Ivoire is poised to become a regional gas exporter. Negotiations between Cote d'Ivoire and Ghana to adopt a memorandum of understanding (MOU) on the sale of gas began in 1997. In April 1999, an agreement was signed by the governments of Cote d'Ivoire and Ghana with the [UK](#) government and [Penspen](#) for a feasibility study to build a gas pipeline between Cote d'Ivoire and Ghana. The UK Department of Trade and Industry has said it will share the cost of the study with Penspen. The pipeline would run from Abidjan to Takoradi in Ghana, which is the location of a power plant currently fueled by light oil. Construction of the pipeline is estimated to take 15-18 months. The possibility of connecting the line to the proposed [West Africa Gas Pipeline \(WAGP\)](#) are being studied.

The GOC estimates that domestic consumption of butane will more than double over the next five years. In 1998, Ocean began operation of a LPG extraction plant it built near Abidjan. The facility produces 40,000 metric tons of LPG (butane) and gasoline annually, from 70 mmcf/d of natural gas feedstock. The GOC and [Morocco](#) signed an agreement in September 1998 for the establishment of an industrial plant in Cote d'Ivoire, Simgaz, to produce gas cylinders. Estimated production from the plant is 350,000 gas cylinders per year. A pilot LPG-fuelled vehicle program has been proposed. Two filling and conversion stations will be constructed in Abidjan.

## **ELECTRICITY**

Cote d'Ivoire currently has installed electric generation capacity of 1.2 gigawatts. Approximately three-fourths of Cote d'Ivoire's installed generating capacity is hydroelectric, with the remainder being provided by thermal generating facilities. The major hydroelectric facilities are: Ayame I, Ayame II, Buyo, Grah, Kossou and Taabo. An additional hydroelectric facility at Soubre is being considered. A feasibility study for the facility, which would be constructed under the build, own, operate transfer (BOOT) scheme, was delayed by Cote d'Ivoire's political upheavals. Construction of the facility will take six to ten years.

SAUR and EDF began the joint-development of the CIPREL (Compagnie Ivoirienne de Production d'Electricite) project in 1993. CIPREL, located at Vridi near Abidjan, was one of the first independent power producer (IPP) projects undertaken in sub-Saharan Africa. CIPREL, which is gas-fired, has a current generating capacity of 210 megawatts (MW). A 100-MW section of the plant began delivering

power to the national grid in 1997, and the final 110-MW section came on line in March 1998.

In June 1997, it was announced that a consortium had won a 23-year BOOT concession to build a third thermal power plant at Azito outside of Abidjan. The consortium, Azitoenergie, includes: Swiss-based [Asea Brown Boveri](#) (ABB), [Industrial Promotion Services](#) (IPS) -- an affiliate of the Aga Khan Fund for Economic Development -- and EDF. The plan called for a \$225-million, 420-MW facility, with operation of the first 144-MW phase beginning in early 1999. Construction of the plant began in the last quarter of 1997. The first phase of the Azito power plant was inaugurated on January 23, 1999. A second 144-MW gas turbine was scheduled to begin operations in January 2000. A steam-powered turbine and two recovery boilers, which will transform the facility into the combined-cycle format, will be added to boost the facility's capacity to the planned 420 MW. On February 19, 1999 the [International Finance Corporation \(IFC\)](#), part of the World Bank group, announced that it had entered into a 14-year, \$32 million interest rate swap with the Azito project. The agreement followed the IFC's earlier \$60 million loan to the project. The [Commonwealth Development Corporation \(CDC\)](#) and the AfDB also provided financing for the Azito project.

CIE handles the management of the government-owned generation facilities as well as transmission and distribution of electricity in Cote d'Ivoire. SAUR and EDF are the majority owners of CIE (51% share). Other investors in CIE included the GOC (20%) and private and employee investors (29%). CIE has nearly doubled the number of its customers in the ten years following its privatization. The number of customers has increased from 400,000 (in 1991) to 750,000 (as of January 2001).

Cote d'Ivoire is a leading proponent of the development of the West African Power Pool (WAPP). The WAPP was formed by an agreement between ECOWAS Energy Ministers in November 1999. Although the formal structure and operational agreements for the pool have yet to be determined, It is envisioned that the WAPP will interconnect the power networks of all the mainland ECOWAS nations. Cote d'Ivoire is currently connected to Ghana, Togo and Benin through one interconnection and a link to Burkina Faso is currently under construction. Additional connections to Mali and Guinea are being studied.

*Sources for this report include: Africa Energy Intelligence; Africa News Service (All Africa.com); Agence France Presse; Arabic News.com; Associated Press; BBC Summary of World Broadcasts; Business Day (South Africa); Business Wire; Canada NewsWire; CIA World Factbook 2000; Deutsche Presse-Agentur; Dow Jones News Wire Service; Economist Intelligence Unit ViewsWire; Financial Times African Energy; Hart's Africa Oil and Gas; Interfax News Agency; Janet Matthews Information Services (Quest Economic Database); La Tribune; M2 Presswire; MBendi Information Services; New York Times; Oil & Gas Journal; Oil Daily; Pan African News Agency (All Africa.com); Petroleum Economist; Petroleum Intelligence Weekly; Platt's Oilgram News; Reuters News Wire; UN Integrated Regional Information Networks (IRIN); U.S. Energy Information Administration; U.S. Department of State; Washington Post; WEFA Middle East & Africa Economic Outlook; World Markets Online; Xinhua.*

## **COUNTRY OVERVIEW**

**President:** Laurent Gbagbo

**Prime Minister:** Affi N'Guessan

**Independence:** August 7, 1960 (from France)

**Population (July 2000):** 15.98 million

**Location/Size:** Western Africa, bordering the Atlantic Ocean, between Liberia and Guinea (on the west); Ghana (on the east); Burkina Faso and Mali (on the north)/322,460 square kilometers (124,500 square miles), slightly larger than New Mexico

**Major Cities:** Yamoussoukro (capital), Abidjan, Bouake

**Languages:** French (official), over 60 native dialects

**Ethnic Groups:** Akan (the Baoule subgroup accounts for 23% of the population), Kru (the Bete subgroup accounts for 18%), Senoufo 15%, Malinke 11%, Agni, Mande. There are nearly 3 million foreign Africans (mainly from Burkina Faso and Mali), and an estimated 130,000-330,000 non-Africans (French 30,000 and Lebanese 100,000-300,000)

**Religion:** Muslim 60%, Christian 22% (predominantly Roman Catholic), traditional beliefs 18%

**Defense (1999E):** Army (6,800), Navy (900), Air Force (700), Republican Guard (includes Presidential Guard) (1,100), Gendarmerie (4,400).

## **ECONOMIC OVERVIEW**

**Minister of the Economy and Finance:** Antoine Bouabre Bohoun

**Currency:** Communauté Financière Africaine (CFA) franc

**Market Exchange Rate (7/17/2001):** US\$1 = 763.5 CFA

**Gross Domestic Product (GDP) (2000E):** \$9.9 billion

**Real GDP Growth Rate (2000E):** -2.4% **(2001F):** 0.8%

**GDP per Capita (2000E):** \$669

**Inflation Rate (2000E):** 2.5% **(2001F):** 3.0%

**Current Account Balance (2000E):** -\$0.9 billion **(2001F):** -\$0.3 billion

**Major Trading Partners:** European Union, Nigeria, United States, Ghana, Burkina Faso, Mali

**Merchandise Exports (2000E):** \$3.8 billion **(2001F):** \$4.1 billion

**Merchandise Imports (2000E):** \$2.5 billion **(2001F):** \$2.5 billion

**Merchandise Trade Balance (2000E):** \$1.3 billion **(2001F):** \$1.6 billion

**Major Export Products:** Cocoa, coffee, timber, petroleum products

**Major Import Products:** Food, consumer goods, industrial goods, machinery

**Total External Debt (2000E):** \$13.2 billion

## **ENERGY OVERVIEW**

**Minister of Mines and Energy:** Leon Emanuel Monnet

**Proven Oil Reserves (1/1/01E):** 100 million barrels

**Oil Production (2001Q1E):** 12,000 barrels per day (bbl/d), of which 11,000 bbl/d is crude oil

**Oil Consumption (1999E):** 58,000 bbl/d **(2000E):** 58,690 bbl/d



**Net Oil Imports (1999E):** 42,000 bbl/d

**Refining Capacity (1/1/01):** 65,200 bbl/d

**Natural Gas Reserves (1/1/01):** 1.05 trillion cubic feet (tcf)

**Natural Gas Production (1999E):** 0.047 tcf

**Natural Gas Consumption (1999E):** 47.32 billion cubic feet

**Electric Generation Capacity (1/1/99E):** 1.17 million kilowatts

**Electricity Generation (1999E):** 4.06 billion kilowatthours

## **ENVIRONMENTAL OVERVIEW**

**Minister of Construction and Environment:** Gilbert Bleu-Laine

**Total Energy Consumption (1999E):** 0.17 quadrillion Btu (0.046% of the world total)

**Energy-Related Carbon Emissions (1999E):** 3.07 million metric tons of carbon (0.050% of world carbon emissions)

**Per Capita Energy Consumption (1999E):** 10.91 million Btu (vs. U.S. value of 355.88 million Btu)

**Per Capita Carbon Emissions (1999E):** 0.19 metric tons of carbon (vs. U.S. value of 5.57 metric tons of carbon)

**Energy Intensity (1999E):** 11,834 Btu/ \$1990 (vs. U.S. value of 12,638 Btu/ \$1990)\*\*

**Carbon Intensity (1999E):** 0.21 metric tons of carbon/thousand \$1990 (vs. U.S. value of 0.20 metric tons/thousand \$1990)\*\*

**Sectoral Share of Energy Consumption (1998E):** Residential (47.4%), Industrial (21.7%), Commercial (17.7%), Transportation (13.2%)

**Sectoral Share of Carbon Emissions (1998E):** Industrial (40.6%), Transportation (33.3%), Commercial (18.4%), Residential (7.6%)

**Fuel Share of Energy Consumption (1999E):** Oil (69.1%), Natural Gas (30.9%)

**Fuel Share of Carbon Emissions (1999E):** Oil (76.8%), Natural Gas (23.3%)

**Renewable Energy Consumption (1998E):** 119.1 trillion Btu\* (4.0% decrease from 1997)

**Number of People per Motor Vehicle (1997):** 30.3 (vs. U.S. value of 1.3)

**Status in Climate Change Negotiations:** Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified November 29th, 1994). Not a signatory to the Kyoto Protocol.

**Major Environmental Issues:** Deforestation (most of the country's forests, once the largest in West Africa, have been cleared by the timber industry); water pollution from sewage and industrial and agricultural effluents

**Major International Environmental Agreements:** A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94 and Wetlands

\* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

## **OIL AND GAS INDUSTRIES**

**Organization:** Petrolieres de la Cote d'Ivoire (Petroci) has four operating subsidiaries (Petroci-Holding, Petroci-Exploration/Production, Petroci-Gaz, and Petroci-Industries/Services)

**Major Oil Fields:** Lion, Panthere

**Major Gas Fields:** Foxtrot, Kudu, Panthere

**Major Refineries (1/1/01 Capacity):** Societe Ivoirienne de Raffinage (SIR) - Abidjan (65,200 bbl/d), Societe Multinationale des Bitumes (SMB) - Abidjan (10,000 bbl/d)

**Foreign Oil Company Involvement:** Addax, Apache, Canadian Natural Resources, Dana Petroleum, Energy Africa, ENI-Agip, ExxonMobil, Gentry, Gulf Canada, Ocean Energy, PanCanadian Petroleum, Pluspetrol, Royal Dutch/Shell, Santa Fe Snyder, Stratic Energy, Texaco, TotalFinaElf, Tullow, Vanco Energy

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